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Gly Gly Gly Arg Gly Ala Leu Pro Thr Ser Met Gly Gln His Gly Pro
    50                  55                  60

Ser Ala Arg Ala Arg Ala Gly Arg Ala Pro Gly Pro Arg Pro Ala Arg
65                  70                  75                  80

Glu Ala Ser Pro Arg Leu Arg Val His Lys Thr Phe Lys Phe Val Val
            85                  90                  95

Val Gly Val Leu Leu Gln Val Val Pro Ser Ser Ala Ala Thr Ile Lys
            100                 105                 110

Leu His Asp Gln Ser Ile Gly Thr Gln Gln Trp Glu His Ser Pro Leu
        115                 120                 125

Gly Glu Leu Cys Pro Pro Gly Ser His Arg Ser Glu Arg Pro Gly Ala
    130                 135                 140

Cys Asn Arg Cys Thr Glu Gly Val Gly Tyr Thr Asn Ala Ser Asn Asn
145                 150                 155                 160

Leu Phe Ala Cys Leu Pro Cys Thr Ala Cys Lys Ser Asp Glu Glu Glu
            165                 170                 175

Arg Ser Pro Cys Thr Thr Thr Arg Asn Thr Ala Cys Gln Cys Lys Pro
            180                 185                 190

Gly Thr Phe Arg Asn Asp Asn Ser Ala Glu Met Cys Arg Lys Cys Ser
        195                 200                 205

Thr Gly Cys Pro Arg Gly Met Val Lys Val Lys Asp Cys Thr Pro Trp
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Ser Asp Ile Glu Cys Val His Lys Glu Ser Gly Asn Gly His Asn Ile
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Ser Leu Ser Thr Phe Val Ser Glu Gln Gln Met Glu Ser Gln Glu Pro
305                 310                 315                 320

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                325                 330                 335

Leu Leu Gly Pro Ala Glu Ala Glu Gly Ser Gln Arg Arg Arg Leu Leu
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Val Pro Ala Asn Gly Ala Asp Pro Thr Glu Thr Leu Met Leu Phe Phe
        355                 360                 365

Asp Lys Phe Ala Asn Ile Val Pro Phe Asp Ser Trp Asp Gln Leu Met
        370                 375                 380

Arg Gln Leu Asp Leu Thr Lys Asn Glu Ile Asp Val Val Arg Ala Gly
385                 390                 395                 400

Thr Ala Gly Pro Gly Asp Ala Leu Tyr Ala Met Leu Met Lys Trp Val
                405                 410                 415

Asn Lys Thr Gly Arg Asn Ala Ser Ile His Thr Leu Leu Asp Ala Leu
                420                 425                 430

Glu Arg Met Glu Glu Arg His Ala Lys Glu Lys Ile Gln Asp Leu Leu
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Val Ser Leu Glu
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Lys Gly Leu Glu Leu Arg Lys Thr Val Thr Thr Val Glu Thr Gln Asn
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Leu Glu Gly Leu His His Asp Gly Gln Phe Cys His Lys Pro Cys Pro
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Pro Gly Glu Arg Lys Ala Arg Asp Cys Thr Val Asn Gly Asp Glu Pro
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Asp Cys Val Pro Cys Gln Glu Gly Lys Glu Tyr Thr Asp Lys Ala His
            85              90          95

Phe Ser Ser Lys Cys Arg Arg Cys Arg Leu Cys Asp Glu Gly His Gly
            100             105             110

Leu Glu Val Glu Ile Asn Cys Thr Arg Thr Gln Asn Thr Lys Cys Arg
        115             120             125

Cys Lys Pro Asn Phe Phe Cys Asn Ser Thr Val Cys Glu His Cys Asp
    130             135             140

Pro Cys Thr Lys Cys Glu His Gly Ile Ile Lys Glu Cys Thr Leu Thr
145             150             155             160

Ser Asn Thr Lys Cys Lys Glu Glu Gly Ser Arg Ser Asn Leu Gly Trp
            165             170             175

Leu Cys Leu Leu Leu Leu Pro Ile Pro Leu Ile Val Trp Val Lys Arg
        180             185             190

Lys Glu Val Gln Lys Thr Cys Arg Lys His Arg Lys Glu Asn Gln Gly
        195             200             205

Ser His Glu Ser Pro Thr Leu Asn Pro Glu Thr Val Ala Ile Asn Leu
    210             215             220

Ser Asp Val Asp Leu Ser Lys Tyr Ile Thr Thr Ile Ala Gly Val Met
225             230             235             240

Thr Leu Ser Gln Val Lys Gly Phe Val Arg Lys Asn Gly Val Asn Glu
            245             250             255

Ala Lys Ile Asp Glu Ile Lys Asn Asp Asn Val Gln Asp Thr Ala Glu
            260             265             270

Gln Lys Val Gln Leu Leu Arg Asn Trp His Gln Leu His Gly Lys Lys
        275             280             285

Glu Ala Tyr Asp Thr Leu Ile Lys Asp Leu Lys Lys Ala Asn Leu Cys
    290             295             300

Thr Leu Ala Glu Lys Ile Gln Thr Ile Ile Leu Lys Asp Ile Thr Ser
305             310             315             320

Asp Ser Glu Asn Ser Asn Phe Arg Asn Glu Ile Gln Ser Leu Val Met
            325             330             335

Leu Gly Ile Trp Thr Leu Leu Pro Leu Val Leu Thr Ser Val Ala Arg
            340             345             350

Leu Ser Ser Lys Ser Val Asn Ala Gln Val Thr Asp Ile Asn Ser Lys
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Gly Leu Glu Leu Arg Lys Thr Val Thr Thr Val Glu Thr Gln Asn Leu
370             375             380
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Gly Glu Arg Lys Ala Arg Asp Cys Thr Val Asn Gly Asp Glu Pro Asp
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Cys Val Pro Cys Gln Glu Gly Lys Glu Tyr Thr Asp Lys Ala His Phe
        420           425           430

Ser Ser Lys Cys Arg Arg Cys Arg Leu Cys Asp Glu Gly His Gly Leu
        435           440           445

Glu Val Glu Ile Asn Cys Thr Arg Thr Gln Asn Thr Lys Cys Arg Cys
    450           455           460

Lys Pro Asn Phe Phe Cys Asn Ser Thr Val Cys Glu His Cys Asp Pro
465           470           475           480

Cys Thr Lys Cys Glu His Gly Ile Ile Lys Glu Cys Thr Leu Thr Ser
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Asn Thr Lys Cys Lys Glu Glu Gly Ser Arg Ser Asn Leu Gly Trp Leu
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Cys Leu Leu Leu Leu Pro Ile Pro Leu Ile Val Val Lys Arg Lys Glu
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Val Gln Lys Thr Cys Arg Lys His Arg Lys Glu Asn Gln Gly Ser His
    530           535           540

Glu Ser Pro Thr Leu Asn Pro Glu Thr Val Ala Ile Asn Leu Ser Asp
545           550           555           560

Val Asp Leu Ser Lys Tyr Ile Thr Thr Ile Ala Gly Val Met Thr Leu
        565           570           575

Ser Gln Val Lys Gly Phe Val Arg Lys Asn Gly Val Asn Glu Ala Lys
        580           585           590

Ile Asp Glu Ile Lys Asn Asp Asn Val Gln Asp Thr Ala Glu Gln Lys
        595           600           605

Val Gln Leu Leu Arg Asn Trp His Gln Leu His Gly Lys Lys Glu Ala
    610           615           620

Tyr Asp Thr Leu Ile Lys Asp Leu Lys Lys Ala Asn Leu Cys Thr Leu
625           630           635           640

Ala Glu Lys Ile Gln Thr Ile Ile Leu Lys Asp Ile Thr Ser Asp Ser
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Glu Asn Ser Asn Phe Arg Asn Glu Ile Gln Ser Leu Val
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Leu Gly Asp Arg Glu Lys Arg Asp Ser Val Cys Pro Gln Gly Lys Tyr
        35                  40                  45

Ile His Pro Gln Asn Asn Ser Ile Cys Cys Thr Lys Cys His Lys Gly
    50                  55                  60

Thr Tyr Leu Tyr Asn Asp Cys Pro Gly Pro Gly Asp Thr Asp Cys Arg
65                  70                  75                  80

Glu Cys Glu Ser Gly Ser Phe Thr Ala Ser Glu Asn His Leu Arg His
                85                  90                  95

Cys Leu Ser Cys Ser Lys Cys Arg Lys Glu Met Gly Gln Val Glu Ile
            100                 105                 110

Ser Ser Cys Thr Val Asp Arg Asp Thr Val Cys Gly Cys Arg Lys Asn
        115                 120                 125

Gln Tyr Arg His Tyr Trp Ser Glu Asn Leu Phe Gln Cys Phe Asn Cys
    130                 135                 140

Ser Leu Cys Leu Asn Gly Thr Val His Leu Ser Cys Gln Glu Lys Gln
145                 150                 155                 160

Asn Thr Val Cys Thr Cys His Ala Gly Phe Phe Leu Arg Glu Asn Glu
            165                 170                 175

Cys Val Ser Cys Ser Asn Cys Lys Lys Ser Leu Glu Cys Thr Lys Leu
        180                 185                 190

Cys Leu Pro Gln Ile Glu Asn Val Lys Gly Thr Glu Asp Ser Gly Thr
        195                 200                 205

Thr Val Leu Leu Pro Leu Val Ile Phe Phe Gly Leu Cys Leu Leu Ser
210                 215                 220

Leu Leu Phe Ile Gly Leu Met Tyr Arg Tyr Gln Arg Trp Lys Ser Lys
225                 230                 235                 240

Leu Tyr Ser Ile Val Cys Gly Lys Ser Thr Pro Glu Lys Glu Gly Glu
            245                 250                 255

Leu Glu Gly Thr Thr Thr Lys Pro Leu Ala Pro Asn Pro Ser Phe Ser
            260                 265                 270

Pro Thr Pro Gly Phe Thr Pro Thr Leu Gly Phe Ser Pro Val Pro Ser
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Ser Thr Phe Thr Ser Ser Ser Thr Tyr Thr Pro Gly Asp Cys Pro Asn
290                 295                 300
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Phe Ala Ala Pro Arg Arg Glu Val Ala Pro Pro Tyr Gln Gly Ala Asp
305              310          315              320

Pro Ile Leu Ala Thr Ala Leu Ala Ser Asp Pro Ile Pro Asn Pro Leu
              325          330              335

Gln Lys Trp Glu Asp Ser Ala His Lys Pro Gln Ser Leu Asp Thr Asp
          340              345              350

Asp Pro Ala Thr Leu Tyr Ala Val Val Glu Asn Val Pro Pro Leu Arg
          355              360              365

Trp Lys Glu Phe Val Arg Arg Leu Gly Leu Ser Asp His Glu Ile Asp
    370              375              380

Arg Leu Glu Leu Gln Asn Gly Arg Cys Leu Arg Glu Ala Gln Tyr Ser
385              390              395              400

Met Leu Ala Thr Trp Arg Arg Arg Thr Pro Arg Arg Glu Ala Thr Leu
              405              410              415

Glu Leu Leu Gly Arg Val Leu Arg Asp Met Asp Leu Leu Gly Cys Leu
          420              425              430

Glu Asp Ile Glu Glu Ala Leu Cys Gly Pro Ala Ala Leu Pro Pro Ala
          435              440              445

Pro Ser Leu Leu Arg Met Gly Leu Ser Thr Val Pro Asp Leu Leu Leu
    450              455              460

Pro Leu Val Leu Leu Glu Leu Leu Val Gly Ile Tyr Pro Ser Gly Val
465              470              475              480

Ile Gly Leu Val Pro His Leu Gly Asp Arg Glu Lys Arg Asp Ser Val
              485              490              495

Cys Pro Gln Gly Lys Tyr Ile His Pro Gln Asn Asn Ser Ile Cys Cys
          500              505              510

Thr Lys Cys His Lys Gly Thr Tyr Leu Tyr Asn Asp Cys Pro Gly Pro
          515              520              525

Gly Gln Asp Thr Asp Cys Arg Glu Cys Glu Ser Gly Ser Phe Thr Ala
    530              535              540

Ser Glu Asn His Leu Arg His Cys Leu Ser Cys Ser Lys Cys Arg Glu
545              550              555              560

Lys Glu Met Gly Gln Val Glu Ile Ser Ser Cys Thr Val Asp Arg Asp
              565              570              575

Thr Val Cys Gly Cys Arg Lys Asn Gln Tyr Arg His Tyr Trp Ser Glu
              580              585              590

Asn Leu Phe Gln Cys Phe Asn Cys Ser Leu Cys Leu Asn Gly Thr Val
          595              600              605

His Leu Ser Cys Gln Glu Lys Gln Asn Thr Val Cys Thr Cys His Ala
    610              615              620

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Gly Phe Phe Leu Arg Glu Asn Glu Cys Val Ser Cys Ser Asn Cys Lys
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Lys Ser Leu Glu Cys Thr Lys Leu Cys Leu Pro Gln Ile Glu Asn Val
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Lys Gly Thr Glu Asp Ser Gly Thr Thr Val Leu Leu Pro Leu Val Ile
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Phe Phe Gly Leu Cys Leu Leu Ser Leu Leu Phe Ile Gly Leu Met Tyr
        675               680               685

Arg Tyr Gln Arg Trp Lys Ser Asp Leu Tyr Ser Ile Val Cys Gly Lys
    690               695               700

Ser Thr Pro Glu Lys Glu Gly Glu Leu Glu Gly Thr Thr Thr Lys Pro
705               710               715               720

Leu Ala Pro Asn Pro Ser Phe Ser Pro Thr Pro Gly Phe Thr Pro Thr
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Leu Gly Phe Ser Pro Val Pro Ser Ser Thr Phe Thr Ser Ser Ser Thr
        740               745               750

Tyr Thr Pro Gly Asp Cys Pro Asn Phe Ala Ala Pro Arg Arg Glu Val
        755               760               765

Ala Pro Pro Tyr Gln Gly Ala Asp Pro Ile Leu Ala Thr Ala Leu Ala
    770               775               780

Ser Asp Pro Ile Pro Asn Pro Leu Gln Lys Trp Glu Asp Ser Ala His
785               790               795               800

Lys Pro Gln Ser Leu Asp Thr Asp Asp Pro Ala Thr Leu Tyr Ala Val
            805               810               815

Val Glu Asn Val Pro Pro Leu Arg Trp Lys Glu Phe Val Arg Arg Leu
            820               825               830

Gly Leu Ser Pro His Glu Ile Asp Arg Leu Glu Leu Gln Asn Gly Arg
        835               840               845

Cys Leu Arg Glu Ala Gln Tyr Ser Met Leu Ala Thr Trp Arg Arg Arg
    850               855               860

Thr Pro Arg Arg Glu Ala Thr Leu Glu Leu Leu Gly Arg Val Leu Arg
865               870               875               880

Asp Met Asp Leu Leu Gly Cys Leu Glu Asp Ile Glu Glu Ala Leu Cys
            885               890               895

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            20              25              30

Cys Asp Cys Ala Gly Asp Phe His Lys Lys Ile Gly Leu Phe Cys Cys
        35              40              45

Arg Gly Cys Pro Ala Gly His Tyr Leu Lys Ala Pro Cys Thr Glu Pro
    50              55              60

Cys Gly Asn Ser Thr Cys Leu Val Cys Pro Gln Asp Thr Phe Leu Ala
65              70              75              80

Trp Glu Asn His His Asn Ser Glu Cys Ala Arg Cys Gln Ala Cys Asp
            85              90              95

Glu Gln Ala Ser Gln Val Ala Leu Glu Asn Cys Ser Ala Val Ala Asp
        100             105             110

Thr Arg Cys Gly Cys Lys Pro Gly Trp Phe Val Glu Cys Gln Val Ser
    115             120             125

Gln Cys Val Ser Ser Ser Pro Phe Tyr Cys Gln Pro Cys Leu Asp Cys
    130             135             140

Gly Ala Leu His Arg His Thr Arg Leu Leu Cys Ser Arg Arg Asp Thr
145             150             155             160

Asp Cys Gly Thr Cys Leu Pro Gly Phe Tyr Glu His Gly Asp Gly Cys
            165             170             175

Val Ser Cys Pro Thr Ser Thr Leu Gly Ser Cys Pro Glu Arg Cys Ala
            180             185             190

Ala Val Cys Gly Trp Arg Gln Met Phe Trp Val Gln Val Leu Leu Ala
        195             200             205

Gly Leu Val Val Pro Leu Leu Leu Gly Ala Thr Leu Thr Tyr Thr Tyr
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Arg His Cys Trp Pro His Lys Pro Leu Val Thr Ala Asp Glu Ala Gly
225             230             235             240

Met Glu Ala Leu Thr Pro Pro Pro Ala Thr His Leu Ser Pro Leu Asp
            245             250             255

Ser Ala His Thr Leu Leu Ala Pro Pro Asp Ser Ser Glu Lys Ile Cys
            260             265             270

Thr Val Gln Leu Val Gly Asn Ser Trp Thr Pro Gly Tyr Pro Glu Thr
    275             280             285

Gln Glu Ala Leu Cys Pro Gln Val Thr Trp Ser Trp Asp Gln Leu Pro
    290             295             300

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Ser Arg Ala Leu Gly Pro Ala Ala Ala Pro Thr Leu Ser Pro Glu Ser
305             310         315             320

Pro Ala Gly Ser Pro Ala Met Met Leu Gln Pro Gly Pro Gln Leu Tyr
            325         330             335

Asp Val Met Asp Ala Val Pro Ala Arg Arg Trp Lys Glu Phe Val Arg
            340         345             350

Thr Leu Gly Leu Arg Glu Ala Glu Ile Glu Ala Val Glu Val Glu Ile
        355         360             365

Gly Arg Phe Arg Asp Gln Gln Tyr Glu Met Leu Lys Arg Trp Arg Gln
    370             375             380

Gln Gln Pro Ala Gly Leu Gly Ala Val Tyr Ala Ala Leu Glu Arg Met
385             390             395             400

Gly Leu Asp Gly Cys Val Glu Asp Leu Arg Ser Arg Leu Gln Arg Gly
            405             410             415

Pro Met Glu Gln Arg Pro Arg Gly Cys Ala Ala Val Ala Ala Ala Leu
        420         425             430

Leu Leu Val Leu Leu Gly Ala Arg Ala Gln Gly Gly Thr Arg Ser Pro
        435         440             445

Arg Cys Asp Cys Ala Gly Asp Phe His Lys Lys Ile Gly Leu Phe Cys
    450             455             460

Cys Arg Gly Cys Pro Ala Gly His Tyr Leu Lys Ala Pro Cys Thr Glu
465             470             475             480

Pro Cys Gly Asn Ser Thr Cys Leu Val Cys Pro Gln Asp Thr Phe Leu
            485             490             495

Ala Trp Glu Asn His His Asn Ser Glu Cys Ala Arg Cys Gln Ala Cys
            500             505             510

Asp Glu Ala Ser Gln Val Ala Leu Glu Asn Cys Ser Ala Val Ala Asp
    515             520             525

Thr Arg Cys Gly Cys Lys Pro Gly Trp Phe Val Glu Cys Gln Val Ser
    530             535             540

Gln Cys Val Ser Ser Ser Pro Phe Tyr Cys Gln Pro Cys Leu Asp Cys
545             550             555             560

Gly Ala Leu His Arg His Thr Arg Leu Leu Cys Ser Arg Arg Asp Thr
            565             570             575

Asp Cys Gly Thr Cys Leu Pro Gly Phe Tyr Glu His Gly Asp Gly Cys
            580             585             590

Val Ser Cys Pro Thr Ser Thr Leu Gly Ser Cys Pro Glu Arg Cys Ala
            595             600             605

Ala Val Cys Gly Trp Arg Gln Met Phe Trp Val Gln Val Leu Leu Ala
    610             615             620

11

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Gly Leu Val Val Pro Leu Leu Leu Gly Ala Thr Leu Thr Tyr Thr Tyr
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Arg His Cys Trp Pro His Lys Pro Leu Val Thr Ala Asp Glu Ala Gly
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Met Glu Ala Leu Thr Pro Pro Pro Ala Thr His Leu Ser Pro Leu Asp
        660             665             670

Ser Ala His Thr Leu Leu Ala Pro Pro Asp Ser Ser Glu Lys Ile Cys
        675             680             685

Thr Val Gln Leu Val Gly Asn Ser Trp Thr Pro Gly Tyr Pro Glu Thr
    690             695             700

Gln Glu Ala Leu Cys Pro Gln Val Thr Trp Ser Trp Asp Gln Leu Pro
705             710             715             720

Ser Arg Ala Leu Gly Pro Ala Ala Ala Pro Thr Leu Ser Pro Glu Ser
            725             730             735

Pro Ala Gly Ser Pro Ala Met Met Leu Gln Pro Gly Pro Gln Leu Tyr
            740             745             750

Asp Val Met Asp Ala Val Pro Ala Arg Arg Trp Lys Glu Phe Val Arg
        755             760             765

Thr Leu Gly Leu Arg Glu Ala Glu Ile Glu Ala Val Glu Val Glu Ile
    770             775             780

Gly Arg Phe Arg Asp Gln Gln Tyr Glu Met Leu Lys Arg Trp Arg Gln
785             790             795             800

Gln Gln Pro Ala Gly Leu Gly Ala Val Tyr Ala Ala Leu Glu Arg Met
            805             810             815

Gly Leu Asp Gly Cys Val Glu Asp Leu Arg Ser Arg Leu Gln Arg Gly
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ttgtttgttg ttgcatcggc ttcaggttnt ggagggggac ccaagtgcat ggacagggtg   360

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gcaang                                                              426


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14

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<223>  n equals a, c, g or t

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agtccccagg ggaggcacag tgtctgctgg tgagttgggg acaggccctt gcaagacctt      180

gtgaggcagg gggtgaaggc catgnctcgg cttcnnntgg tcaaagggga agtggagcct      240

gagggagatg ggacttnagg gggacggngc tgcgtgggga aaaagcagcc accntttgac      300

aaggggggaca ggcattttttn caaatgtgtg cttnttggt                           339


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15

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<213> human

<400> 11
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<210> 12
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<210> 13
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tctcccggac tcctgaggtc acatgcgtgg tggtggacgt aagccacgaa gaccctgagg     180

tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg     240

aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact     300

ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca acccccatcg     360

agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc     420

catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct     480

atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga     540

ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag ctcaccgtgg     600

acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggctctgc     660

16

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acaaccacta cacgcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc      720

gactctagag gat                                                          733
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